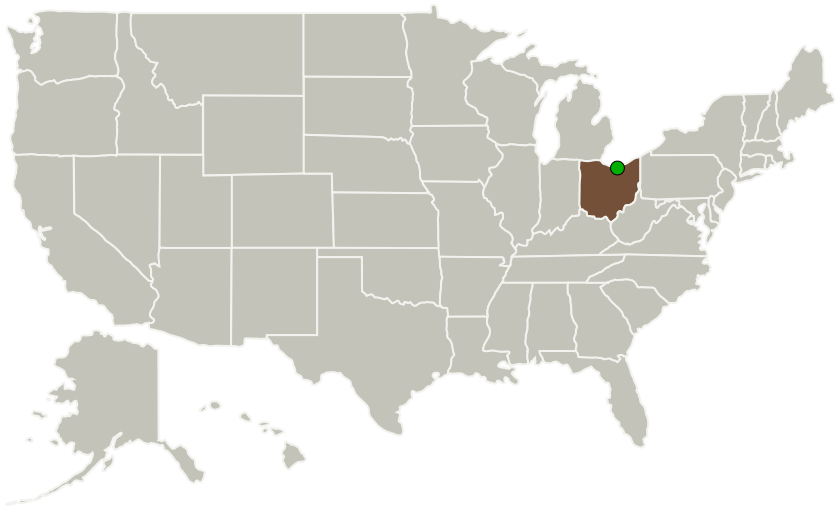
No-Oven, No-Autoclave, Composite Processing, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

Large, single-piece composite structures for NASA launch vehicles are currently very expensive or impossible to fabricate partly because of the capital (ovens, autoclaves, and tooling) needed to cure the part and maintain tolerances at cure conditions. CRG proposes the use of recently developed, no-oven, no-autoclave composite processing technology to fabricate very large, high-performance, single-piece composite structures and tooling for NASA launch vehicles and other aerospace structures. This will reduce capital (plant, equipment, and tooling), operating, and labor-based manufacturing costs. This technology enables rapid manufacturing of large, single-piece structures with no dependence on size-limiting infrastructure and offers the potential for on-site manufacturing. CRG believes this technology to be equally beneficial for quick throughput in smaller sized, high-volume production; but the proposed focus will be large, low-volume production. This technology proposes to surpass current efforts on out-of-autoclave composite processing technology in terms of both acquisition and operations cost to the end user. This will be accomplished through lower production costs and lightweight, unitized structures that require less maintenance. This three-phase program proposes to advance this technology from a Technology Readiness Level (TRL) of 4 and a Manufacturing Readiness Level (MRL) of 3 to a TRL of 9 and a MRL of 9.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Cornerstone Research Group, Inc.	Lead Organization	Industry	Miamisburg, Ohio
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations
Ohio

Project Transitions

February 2011: Project Start

August 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140166)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Cornerstone Research Group, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Michael D Rauscher

Co-Investigator:

Michael Rauscher

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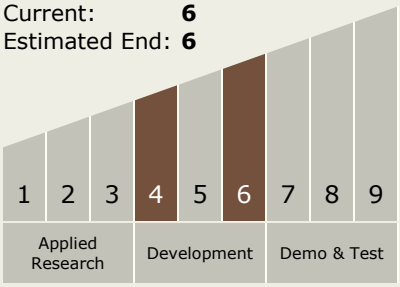
Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System